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EFFECT OF CHANGING INPUT PRICES
ON NET FARM INCOME OF TYPICAL CASH GRAIN,
WHEAT AND COTTON FARMS WITH
ALTERNATIVE TARGET PRICES

BY

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Economic Research Service
United States Department of Agriculture

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COMMODITY
ECONOMICS DIVISION

ECONOMIC RESEARCH SERVICE   U.S. DEPARTMENT OF AGRICULTURE

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The Agriculture and Consumer Protection Act of 1973 establishes target prices for feed grain, wheat and cotton. The target price levels for 1974 and 1975 are specified in the Act. For 1976 and 1977 target prices are to be adjusted to reflect changes during the previous calendar year in the index of prices paid by farmers for production items, interest, taxes and wage rates. Target prices are also to be adjusted for changes in yields, using a 3 year moving average.

Prices paid for production items, interest, taxes and wage rates have increased sharply since the passage of the 1973 Act. In recognition of the sharp cost increases several bills have been introduced in Congress to adjust 1975 target prices in the same manner provided for 1976 and 1977 or to establish new target prices for 1974 which would be adjusted in later years as provided in present legislation.

The purpose of this analysis is to estimate the effects of continued changes in prices paid and alternative price specifications on net farm income of selected representative farms. The three farms include an Illinois cash grain farm, a Kansas wheat farm and a Mississippi Delta cotton farm.

The Illinois cash grain farm is chosen to represent a subsector where corn production is important. The farm has 400 acres of tillable land with roughly half of the tillable land in corn, one-third in soy-

beans and the remainder in other crops or idle. A Kansas wheat farm is chosen to represent subsectors where wheat is important. This farm had 465 acres of tillable land with slightly over half the cropland in wheat, one fifth in sorghum and corn and the remainder in other crops and fallow. A Mississippi Delta cotton farm represents cotton subsectors. This farm has 1200 acres of tillable land, nearly equally divided between cotton and soybeans. These farms were not chosen to represent a given size distribution but to show the effect of changes over time in prices and acreages and the effect of proposed target prices on farm income. Historical crop acreages are changed from year to year in the same proportion as acreages in the area. Conclusions drawn from analysis of these farm situations probably will apply to similar farm situations over a rather wide size range and geographic area. In general, the effect of changing target prices will depend on the relative importance of feed grain, wheat and cotton in the farm situation.

Changes in Prices Paid

The September 1974 index of prices paid for production items, interest, taxes and wage rates was 19 percent higher than in July 1973, the latest figure available when the 1973 Act was passed (table 1). The December 1974 index could be about 24 percent above July 1973. Changes in prices paid from July 1973 to December 1974 are expected to vary from a decrease of 37 percent for feeder cattle to an increase of 89 percent for fertilizer. Since feed and feeder livestock (the live-

stock component) are not used in crop production, a case could be made for omitting these items from the index of prices paid when adjusting target prices. If this change were made, the increase from July 1973 to December 1974 would probably be about 30 percent instead of 24 percent.

Further increase in prices paid is expected for 1975. If input prices rise as much as indicated by the indexes in table 2, the index of production items, interest, taxes and wage rates in 1975 would be about 35 percent above the 1973 annual average. With the livestock components omitted the index would be about 42 percent above 1973. The annual average index for 1973 was about the same as for July 1973 so the increase in annual average indexes can be compared with the increase from July 1973 to December 1974.

Method of Analysis

First an estimate of the 1971-74 organization, production and net farm income for three representative farms is made to give perspective to the 1975 net farm income estimates with alternative target prices.

Second, projections of farm organization, production and net farm income for 1975 assuming no increase in production cost rates over 1973. Market prices are set equal to target prices as specified in existing legislation. Soybean and oat prices are $2.90 and $.67 per bushel, respectively. These projections provide a basis for evaluating 1974-75 target prices with conditions prevailing at the time the 1973 act was passed. Net farm incomes were then recalculated

Table 1.--Indexes of prices paid by farmers, July 1973 and Sept. 1974 and Projected Dec. 1974

Item	July 1973 1/ Index	Sept. 1974 1/ Index	Projected Dec. 1974 2/ Index	Projected Dec. 1974 2/ Change from July 1973
	--- 1910-14=100 ---			Percent
Feed	363	432	450	24
Feeder livestock	723	454	454	-37
Motor supplies	220	302	311	41
Motor vehicles	672	790	858	28
Farm machinery	668	843	933	40
Building and fencing materials	630	778	879	40
Fertilizer	172	325	325	89
Farm supplies	332	422	460	39
Seed	369	557	557	51
Interest	854	974	974	14
Taxes	1382	1451	1451	5
Wage rates	1320	1467	1447	10
Production items, interest taxes and wage rates	539	644	670	24
Percent of July 1973	100	119	124	
	--- 1955=100 ---			
Production items, interest taxes and wage rates with feed and feeder livestock omitted	193	242	252	31
Percent of July 1973	100	125	131	

1/ Agricultural Prices.

2/ Unpublished data from ERS.

Table 2.--Indexes of prices paid by farmers 1973 and projected 1975

Item	1973 1/	1975 2/	Change
	--- 1910-14=100 ---		Percent
Feed	348	437	26
Feeder livestock	698	526	-24
Motor supplies	228	366	61
Motor vehicles	671	813	21
Farm machinery	664	975	47
Building and fencing materials	628	934	49
Fertilizer	176	383	118
Farm supplies	330	492	49
Seed	388	700	80
Interest	854	1071	25
Taxes	1382	1524	10
Wage rates	1313	1584	21
Production items, interest, taxes and wage rates	534	719	35
	--- 1955=100 ---		
Production items, interest, taxes and wage rates with feed and feeder livestock omitted	194	276	42

1/ Agricultural Prices.
2/ Unpublished data from ERS.

assuming costs increased from 1973 to 1975 as projected in table 2 and prices received remained at target price levels.

The final step is to reestimate 1975 net farm income with projected 1975 costs and 3 alternative target price levels. Deficiency payments make up the difference between market prices and the higher target prices. The first set of alternative target prices is based on current target prices adjusted by the change in index of production items, interest, taxes and wage rates from July 1973 to December 1974 and the change in 3 year moving average yield (table 3). The second set is similar to the first except that the livestock component (feed and feeder livestock) is removed from the index of production items, interest, taxes and wage rates. The last set is obtained by adjusting higher levels of target prices provided in S2005 by the change in index of prices paid during 1974 and the 3 year moving average yield from 1973 to 1974.

In developing alternative target price levels for 1975 the increase due to higher prices paid was 24.3 percent, 30.5 percent and 19.0 percent for the first, second, and third alternative sets of target prices, respectively. Lower projected yields in 1974 increased wheat and corn target prices by 6.1 and 5.1 percentage points, respectively. The 1974 cotton yield is projected to be less than in 1972 and 1973, but higher than in 1971. As a result the yield adjustment factor subtracted 2.2 percentage points from the cotton target price adjustment index. This difference in the effect of yield adjustment on changes in target prices results from the erratic nature of 3 year moving averages, but particularly from the effect of the unusually low yields in 1974.

Results

Net Farm Income with Existing Legislation

If costs had not increased after the passage of the Agriculture and Consumer Protection Act in 1973 and market prices were equal to the target prices provided in current legislation net farm income in 1975 would be higher than in 1971 on each of the three types of farms (table 4 and figures 1-3). On the Kansas wheat farm and the Delta cotton farm incomes would be about the same as in 1972 but less than in 1973 and 1974. On the cash grain farms net farm income would be less than 1972-74.

However, costs on these farms are projected to increase 41 to 64 percent in comparison with the 31 percent increase projected in the index of production items, interest, taxes and wage rates with the livestock component removed, (table 5). The large projected increase in costs on these farms is mostly because fertilizer accounts for a larger proportion of expenses than for the average of all farms in the U.S.

With the expected increase in costs from 1973 to 1975 and market prices equal to target prices, net farm incomes on each farm type would be substantially less than either those in 1971 or with no increase in costs from 1973 to 1975. On the Illinois cash grain farm the increase in costs from 1973 to 1975 would reduce net farm income 56 percent below the estimate with 1973 costs and 39 percent below 1971. If allowance were made for decreased purchasing power of the dollar the reduction in net farm income would be even greater.

On the Kansas wheat farm where costs are projected to increase 64 percent, net farm income would be 68 percent below the estimate with 1973 costs and 50 percent below 1971. The largest percentage reduction--88 percent below the estimate with 1973 costs and 82 percent below 1971--

Table 3.--Alternative target prices for corn, wheat and cotton 1975

Alternative	Corn	Wheat	Cotton
	Dol./bu.	Dol./bu.	Dol./no.
1. Provided in 1973 Act----------------	1.38	2.05	.38
2. Adjusted for changes in prices paid from July '73 to Dec. 1974 1/	1.79	2.67	.464
3. Same as 2 except livestock component removed 2/	1.87	2.80	.488
4. Provided in S2005	2.49	3.75	.584

1/ Target prices adjusted for change in index of prices paid for production items, interest taxes, and wage rates and change in 3-year moving average yields.

2/ Feed and feeder livestock removed.

3/ Target prices provided in S2005 for 1974 are adjusted for change in production items, interest, taxes and wage rates from December 1973 to projected index for December 1974 and change in the 3-year moving average crop yield. October yields were used for 1974 yields.

Table 4. -- Net farm income, selected representative farms 1971-74 and projected 1975 with market prices at various target price levels

Item With actual or projected market prices	Illinois cash grain 1/	Kansas wheat 2/	Delta cotton 3/
	----Dollars----		
1971	17,946	9,289	41,501
1972	36,311	14,211	69,535
1973	56,469	40,012	114,872
1974	66,975	20,448	121,959
1975 organization			
Target prices under 1973 Act			
No change in cost rates	25,035	14,726	69,284
1975 cost rates	10,900	4,690	8,061
Target prices adjusted from			
July 1973	18,314	10,502	31,782
July 1973 with Livestock component removed	19,763	11,701	40,847
Senate Bill 2005	30,978	20,535	77,249

1/ Three hundred and ninety acres of cropland used mainly for corn and soybeans.

2/ Four hundred and sixty five acres of cropland used mainly for wheat grain and sorghum. No allowance is made for livestock income from grazing wheat.

3/ Twelve hundred acres of cropland used mainly for cotton and soybeans.

Figure 1. Net farm income, Illinois cash grain farm

A. Assuming market prices equal to target prices in current legislation and 1973 input prices.
B. Same as A except 1975 projected input prices.
C. Same as B except that target prices are adjusted for increase in index of production items, interest, taxes, and wage rates from July 1973 to December 1974.
D. Same as C except prices paid for feed and feeder livestock are removed from index.
E. Same as B except target prices as provided in S2005 are used.

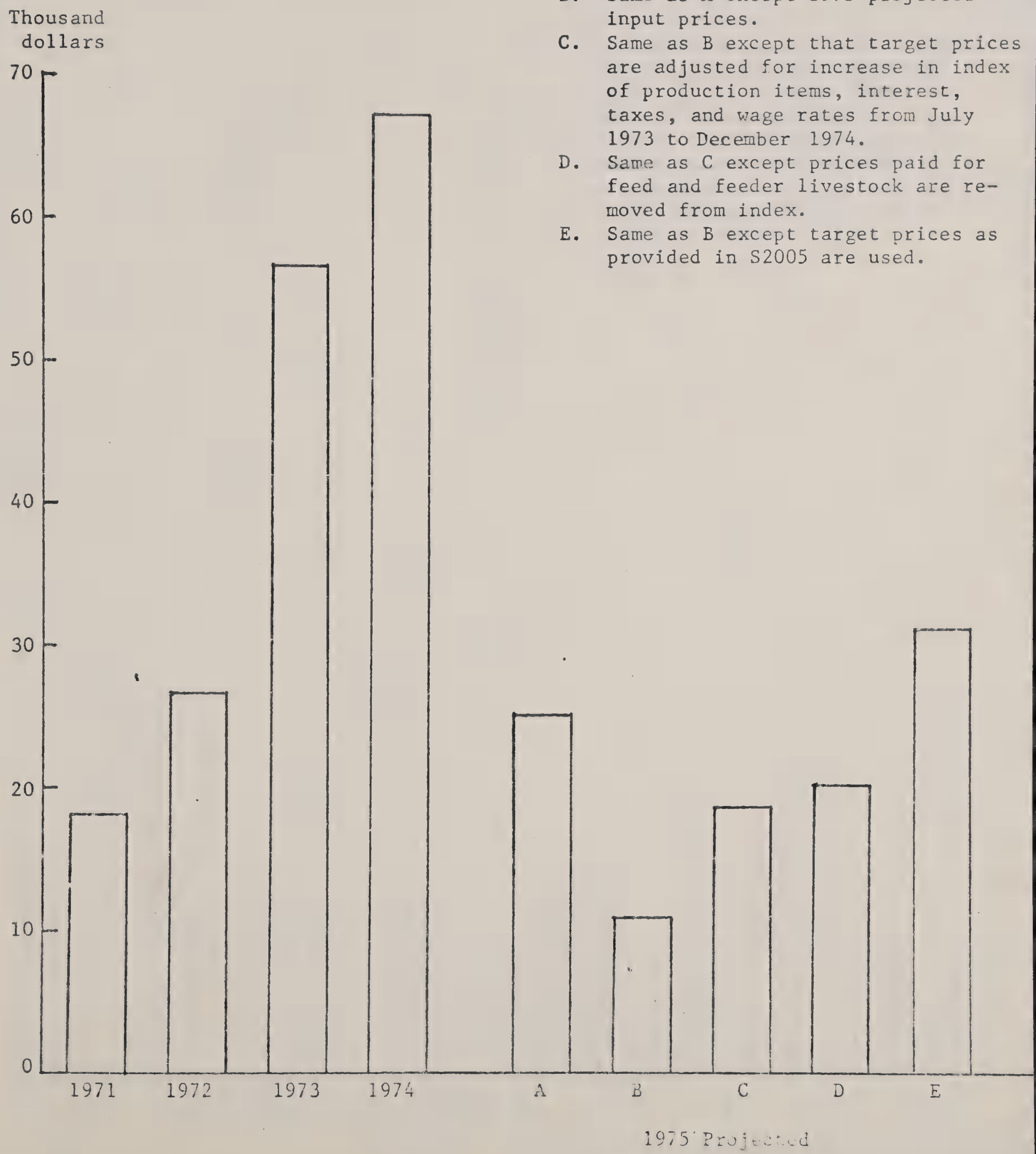

Figure 2. Net farm income, Kansas wheat farm

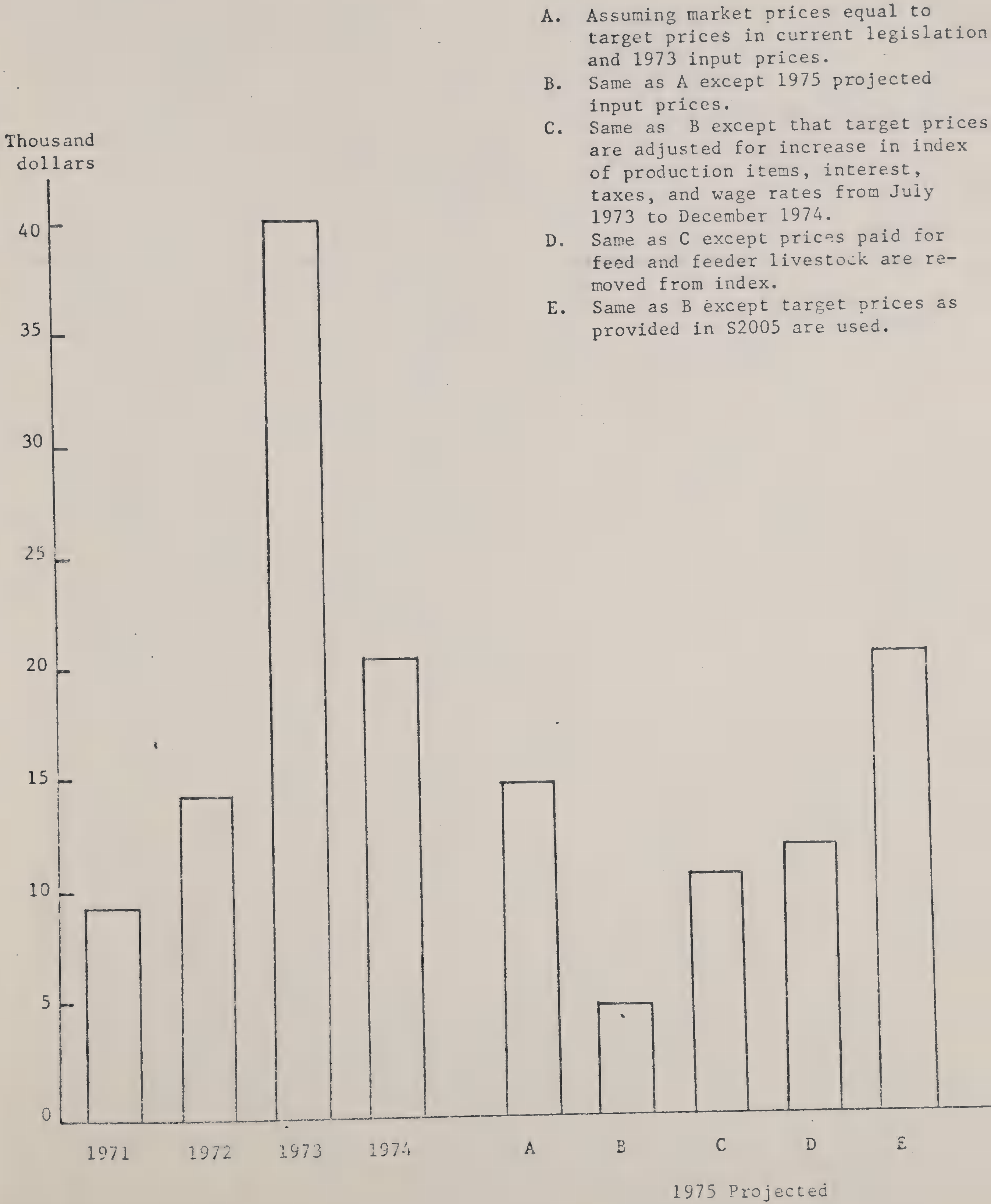

Figure 3. Net farm income, Delta cotton farm

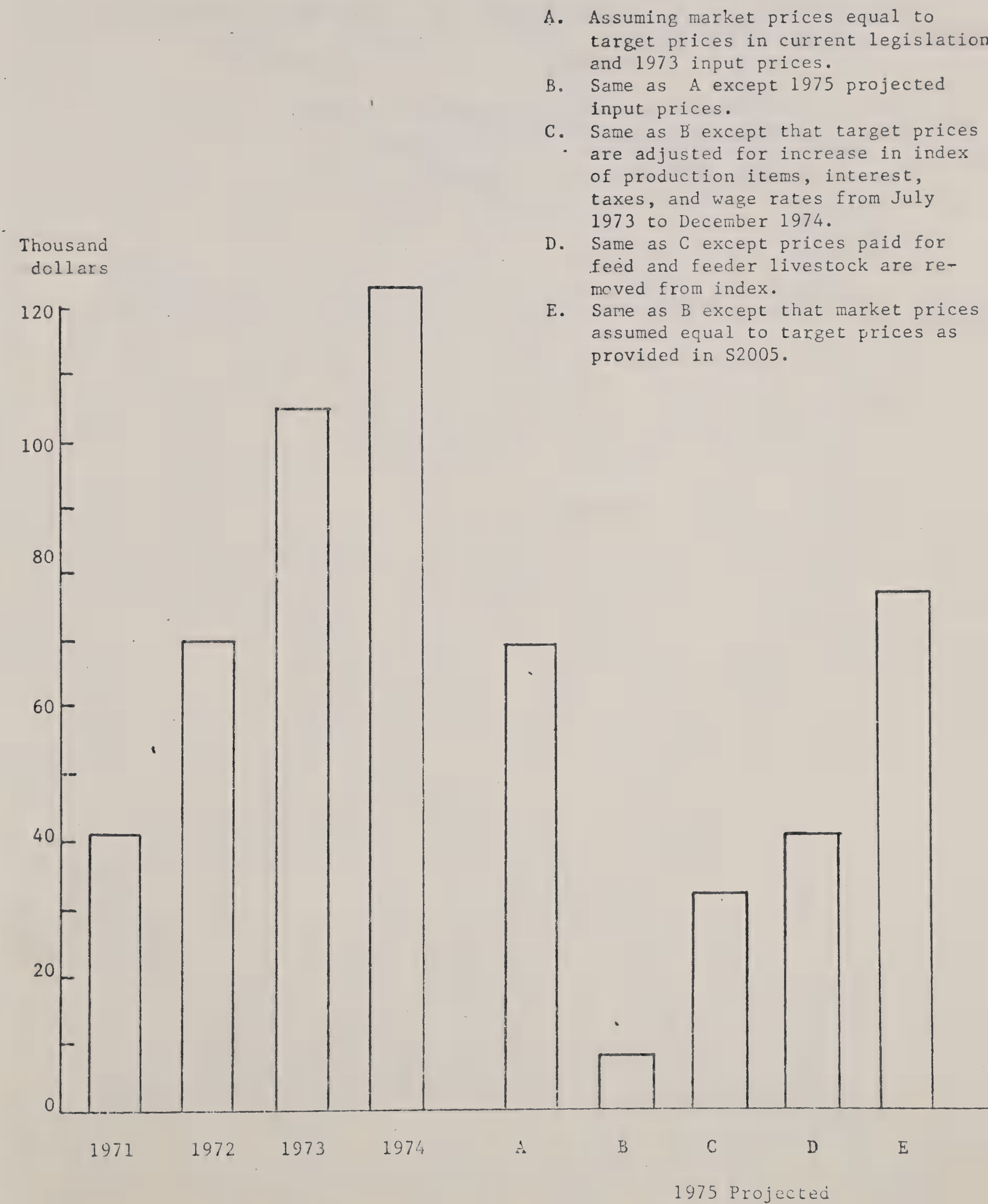

Table 5. -- Change in cash farm expenses due to increased prices paid on selected representative farms from 1973 to 1975 assuming projected 1975 organization

Item	Farm Expenses: Based on 1973 prices paid	Farm Expenses: Based on 1975 prices paid	Change
	--- Dollars ---		Percent
Illinois cash grain	28,372	42,487	50
Kansas wheat	15,614	25,650	64
Delta cotton	147,732	208,956	41

would be on the Delta cotton farm. The large reduction on the Delta cotton farm is because net farm income is a smaller proportion of gross income than on the wheat or cash grain farms.

Effect of Raising Target Prices on Net Farm Income

Adjusting target prices for 1975 by the increase in index of production items, interest, taxes and wage rates for changes from July 1973 to December 1974 is not sufficient to offset the projected increase in farm expenses on the three crop farms from 1973 to 1975. There are at least three reasons for this. First, some further increase in prices paid is expected between December 1974 and the time expenditures are incurred in 1975. Second the index of prices paid for production items includes feed and feeder livestock which declined or did not increase as much as most other items from 1973 to 1975. Third, some items such as commercial fertilizer are relatively more important on these crop farms than on all farms.

If prices paid for feed and feeder livestock are removed from the index of production items, interest, taxes and wage rates, the resulting increase in target prices would lift net farm incomes 8 to 29 percent but not enough to offset the increase in prices paid from 1973 to 1975. Because of the recent rise in prospective prices paid for feed in 1975, removal of the livestock and feed components from the index of production items, interest, taxes and wage rates made less difference in net farm income than when this analysis was first made three months earlier. Recent changes in prices paid for feed and feeder livestock

have differed considerably from changes in prices paid for other items.

On each type of farm, substitution of target prices as provided in S2005 (Humphrey Bill) would raise net farm income more than enough to offset the projected increase in cost from 1973 to 1975. Net farm incomes would also be higher than in 1971. On the Kansas wheat farms net farm income would be higher than in any of the four previous years except 1973. On the Mississippi Delta cotton farm net farm income would also be higher than in 1972 but lower than in 1973 and 1974.